Reference and Source Materials

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"Can We Talk? Public Safety and the Interoperability Challenge," National Institute of Justice. April 2000.

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"Improving NYPD Emergency Preparedness and Response," McKinsey & Company. August 19, 2002.

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Public Safety Wireless Network, Department of Justice and Department
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"Public Safety: Radio Spectrum—A Vital Resource for Saving Lives and
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Issues Facing Public Safety Communications," Public Safety Wireless
Network, Department of Justice and Department of Treasury.

"Public Safety Wireless Communications Systems: A Priority
Investment for America's Future Safety," Public Safety Wireless
Network, Department of Justice and Department of Treasury.

"Public Safety WINS: Wireless Interoperability National Strategy—
Policy Implications: Spectrum," Public Safety Wireless Network
Program, Department of Justice and Department of Treasury. February
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Hon. William H. Erickson, Chairman, May 2001.

"Report on Funding Strategy for Public Radio Safety Radio
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"State and Local Law Enforcement Wireless Communications and
Interoperability: A Quantitative Analysis," National Institute of Justice.
January 1998.

"Understanding Wireless Communications in Public Safety," National
Institute of Justice. March 2000.

Recommended Websites

The following websites are recommended for additional information on public safety wireless communications and interoperability.

Arlington County, Virginia
http://www.co.arlington.va.us/fire/edu/about/docs/aar.htm

This report describes Arlington County, Virginia's response to the September 11, 2001 attack on the Pentagon.

Association of Public Safety Communications Officials - International, Inc. (APCO)
http://www.apcointl.org

The Association of Public Safety Communications Officials - International, Inc. — APCO International — is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications.

Capital Wireless Integrated Network (CapWIN)
http://www.capwinproject.com

The Capital Wireless Integrated Network (CapWIN) project is a partnership between the States of Maryland and Virginia and the District of Columbia to develop an integrated transportation and criminal justice information wireless network. This unique project will integrate transportation and public safety data and voice communication systems in two States and the District of Columbia, and will be the first multi-state transportation and public safety integrated wireless network in the United States.

CommTech

http://www.nijcommtech.org

The National Institute of Justice's CommTech Program has a mission to assist State and local law enforcement agencies to effectively and efficiently communicate with one another across agency and jurisdictional boundaries. It is dedicated to studying interoperability options and making valuable information available to law enforcement, firefighters, and emergency technicians in different jurisdictions in communities across the country.

DHS/SAFECOM

http://www.safecomprogram.gov/

SAFECOM's mission is to serve as the umbrella program within the Federal Government to help local, tribal, state, and federal public safety agencies improve public safety response through more effective and efficient interoperable wireless communications. Communications interoperability is the ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when authorized.

Federal Communications Commission

http://www.fcc.gov/Bureaus/Engineering_Technology/Orders/1997/fcc
97421.txt

Testimony before the FCC in the matter of Reallocation of Television Channels 60-69, the 746-806 MHz Band (adopted December 31, 1997).

http://www.wireless.fcc.gov

The Wireless Telecommunications Bureau (WTB) handles nearly all FCC domestic wireless telecommunications programs and policies.

National Law Enforcement and Corrections Technology Center (NLECTC)

http://www.nlectc.org

Created in 1994 as a component of the National Institute of Justice's (NIJ's) Office of Science and Technology, the National Law Enforcement and Corrections Technology Center (NLECTC) system serves as the "honest broker" offering support, research findings, and technological expertise to help State and local law enforcement and corrections personnel perform their duties more safely and efficiently.

National Public Safety Telecommunications Council (NPSTC)

http://www.npstc.du.edu

The National Public Safety Telecommunications Council (NPSTC) is a federation of associations representing public safety telecommunications. The purpose of NPSTC is to follow up on the recommendations of the Public Safety Wireless Advisory Committee (PSWAC). In addition, NPSTC acts as a resource and advocate for public safety telecommunications issues.

National Telecommunications and Information Administration

http://www.ntia.doc.gov/publicsafety

The National Telecommunications and Information Administration (NTIA), an agency of the Department of Commerce, is the Executive Branch's principal voice on domestic and international telecommunications and information technology issues. NTIA works to spur innovation, encourage competition, help create jobs, and provide consumers with more choices and better quality telecommunications products and services at lower prices.

Project Hoosier SAFE-T

http://www.in.gov/ipsc/safe-t/

Project Hoosier SAFE-T is an initiative of the Integrated Public Safety Commission in Indiana to develop a statewide voice and data public safety communication system. It is designed to meet the needs of local, State, and Federal public safety agencies, including law enforcement, fire, EMS, emergency management, transportation, health, and hazardous materials.

Federal Funding for Communications and Information-Sharing Planning, Development, and Equipment

Bureau of Justice Assistance Local Law Enforcement Block Grants (LLEBG)
Funds from the LLEBG program may be used for procuring equipment, technology, and other material directly related to basic law enforcement functions. http://www.ojp.usdoj.gov/BJA/

Criminal Justice Funding Report
Criminal Justice Funding Report is a biweekly report that highlights various funding sources for justice issues.   Subscriptions and information can be obtained at http://capitolcitypublishers.com/news/crime/

Federal Emergency Management Agency (FEMA)
This site offers information on Federal disaster assistance and funding. http://www.fema.gov/

Justice Technology Information Network (JUSTNET)
The JUSTNET web site lists many grants and funding sources in the Virtual Library. http://www.justnet.org/

Making Officer Redeployment Effective (COPS MORE) Grants
This grant program, provided through the Community Oriented Policing Services (COPS) office, is designed to expand the time available for community policing by current law enforcement officers through the funding of technology, equipment, and support personnel.
http://www.usdoj.gov/cops/

National Institute of Justice (NIJ) Funding Opportunities
NIJ is the research and development agency of the U.S. Department of Justice and is the only Federal agency solely dedicated to researching crime control and justice issues. This page lists the most recent solicitations issued by NIJ. http://www.ojp.usdoj.gov/nij/

Office for Domestic Preparedness Equipment Grant Program
The goal of the ODP Equipment Grant Program is to provide funding to enhance the capacity of State and local jurisdictions to respond to, and mitigate the consequences of, incidents of domestic terrorism involving the use of a Weapon of Mass Destruction (WMD). Communications equipment is included on the authorized equipment purchase lists for these ODP grants.
http://www.ojp.usdoj.gov/odp/

Office of Justice Programs (OJP)
On this page, you will find links to current funding opportunities at OJP listed by their source and various grant-related forms and information.
http://www.ojp.usdoj.gov/

Office of Juvenile Justice and Delinquency Prevention (OJJDP)
This site lists funding announcements from OJJDP. http://ojjdp.ncjrs.org/

Office of Justice Programs (OJP) Information Technology Initiatives
The OJP Information Technology Initiatives web site offers access to timely and useful information on the information-sharing process, initiatives, and technological developments. The funding section of this site provides information on both Federal and private funding sources, examples of innovative funding ideas, and tips on researching funding legislation.
http://www.it.ojp.gov/

Office of National Drug Control Policy, Counterdrug Technology Assessment Center (CTAC) Technology Transfer Program
The CTAC Technology Transfer Program assists State and local law enforcement agencies in obtaining the necessary equipment and training for counterdrug deployments and operations.
http://www.whitehousedrugpolicy.gov/

Technology Opportunities Program (TOP)
The Technology Opportunities Program (TOP) from the National Telecommunications and Information Administration gives grants for model projects demonstrating innovative uses of network technology.
http://www.ntia.doc.gov/top/

United States Department of Justice (DOJ)
DOJ offers funding opportunities to conduct research, to support law enforcement activities in State and local jurisdictions, to provide training and technical assistance, and to implement programs that improve the criminal justice system. http://www.usdoj.gov/

U.S. Fire Administration Assistance to Firefighters Grant Program
The purpose of the program is to award 1-year grants directly to fire departments of a State to enhance their abilities with respect to fire and fire-related hazards. http://www.usfa.fema.gov/grants/

Glossary of Terms

antenna

Any structure or device used to collect or radiate electromagnetic waves.

band

In communications, the spectrum between two defined limited frequencies. For example, the Ultra High Frequency (UHF) band is located from 300 MHz to 3,000 MHz in the radio frequency spectrum.

channel

A single unidirectional or bidirectional path for transmitting or receiving, or both, of electrical or electromagnetic signals.

communications system

A collection of individual communications networks, transmission systems, relay stations, tributary stations, and data terminal equipment usually capable of interconnection and interoperation to form an integrated whole. The components of a communications system serve a common purpose, are technically compatible, use common procedures, respond to controls, and operate in unison.

coverage

The geographic area included within the range of a wireless radio system.

data

Representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by human or by automatic means. Any representations such as characters or analog quantities to which meaning is or might be assigned.

dead spots (or zones)

The area, zone, or volume of space that is within the expected range of a radio signal, but in which the signal is not detectable and therefore cannot be received. Common causes of dead spots include depressions in the terrain and physical structures.

digital signal

A signal in which discrete steps are used to represent information.

frequency
For a periodic function, the number of cycles or events per unit time.

frequency bands
Frequency bands where land mobile radio systems operate in the
United States including the following:

High HF	25-29.99 MHz
Low VHF	30-50 MHz
High VHF	150-174 MHz
Low UHF	450-470 MHz
UHF TV Sharing	470-512 MHz
700 MHz	764-776/794-806 MHz
800 MHz	806-869 MHz

infrastructure
When relating to radio communications systems, the hardware and
software needed to complete and maintain the system.

interference
In general, extraneous energy, from natural or man-made sources, that
impedes the reception of desired signals.

interoperability
The ability of public safety agencies to be able to talk to one another—
to exchange voice and/or data with one another on demand and in real
time.

interstate compact agreement
A written contract between States to cooperate on a policy issue or
program that extends across and through State boundaries.

joint powers act
A written contractual agreement entered into between two or more
public agencies subject to any constitutional or legislative restriction
imposed upon any of the contracting public agencies.

kilohertz (KHz)
A unit of frequency denoting one thousand (10^3) Hz.

megahertz (MHz)
A unit of frequency denoting one million (10^6) Hz.

memorandum of understanding (MOU)
An agreement of cooperation between organizations defining the roles
and responsibilities of each organization in relation to the other or oth-
ers with respect to an issue over which the organizations have concur-
rent jurisdiction.

pager
 A communications device in which the intended receiver is alerted to
receive a message or return a call.

patch
A control center subsystem that permits a mobile or portable radio on
one channel to communicate with one or more radios on a different
channel through the control center console.

proprietary software
Signaling protocol or software that is unique to a manufacturer and
incompatible with other manufactured systems.

protocol
A set of unique rules specifying a sequence of actions necessary to per-
form a communications function.

public officials
Public officials represent or work for government entities often in exec-
utive roles. Public officials include elected and appointed officials at
every level of government working to serve the public in a variety of
roles, such as council members, police chiefs, fire chiefs, sheriffs, gover-
nors, chief information officers, mayors, and chief communications
officers.

public safety service providers
Persons who perform emergency first response missions to protect and
preserve life, property, and natural resources and to serve the public
welfare through Federal, State, or local governments as prescribed by
law. Public safety service providers also include non-governmental
organizations who perform public safety functions on behalf of the
government. For example, a number of local governments contract
with private groups for emergency medical services.

public safety support providers
Includes those whose primary mission might not fall within the classic
public safety definition, but whose mission may provide vital support
to the general public and/or the public safety official. Law enforce-

ment, fire, and EMS would fit the first category, while transportation or public utility workers would fit the second.

radio cache
A portable or permanent storage facility for radios.

radio channel
An assigned band of frequencies sufficient for radio communication. The bandwidth of a radio channel depends upon the type of transmission and the frequency tolerance. A channel is usually assigned for a specified radio service to be provided by a specified transmitter.

radio equipment
As defined in Federal Information Management Regulations, any equipment or interconnected system or subsystem of equipment (both transmission and reception) that is used to communicate over a distance by modulating and radiating electromagnetic waves in space without artificial guide. This does not include such items as microwave, satellite, or cellular telephone equipment.

radio frequency (RF)
Any frequency within the electromagnetic spectrum normally associated with radio wave propagation.

radio communication
Telecommunication by means of radio waves.

signal
The detectable transmitted energy which carries information from a transmitter to a receiver.

spectrum
The usable radio frequencies in the electromagnetic distribution. Specific frequencies have been allocated to the public safety community. They include:

High HF	25-29.99 MHz
Low VHF	30-50 MHz
High VHF	150-174 MHz
Low UHF	450-470 MHz
UHF TV Sharing	470-512 MHz
700 MHz	764-776/794-806 MHz
800 MHz	806-869 MHz

system

Any organized assembly of resources and procedures united and regulated by interaction or interdependence to accomplish a set of specific functions.

trunked radio system

A system that integrates multiple channel pairs into a single system. When a user wants to transmit a message, the trunked system automatically selects a currently unused channel pair and assigns it to the user, decreasing the probability of having to wait for a free channel for a given channel loading.

Acronyms

Throughout the main report and appendices, the following acronyms have been used.

COG	Council of Governments
EIA	Electronics Industry Association
EMS	Emergency Medical Services
FCC	Federal Communications Commission
GHz	Gigahertz
MHz	Megahertz
KHz	Kilohertz
MOU	Memorandum of Understanding
NCIC	National Crime Information Center
NPSAC	National Public Safety Advisory Committee
PDA	Personal Digital Assistant
PSWAC	Public Safety Wireless Advisory Committee
PSWN	Public Safety Wireless Network
RF	Radio Frequency
ROI	Return on Investment
TIA	Telecommunications Industry Association
UHF	Ultra High Frequency Band
VHF	Very High Frequency